Remarks

Claims 20 and 22 have been amended to more particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Support for claims 20 and 22 is found, for example, in the claims as filed and in the present application at pg. 29, l. 25 – pg. 30, l. 15. New claims 26-28 have been added. Support for claims 26-28 is found, for example, in the claims as filed and in the present application at pg. 6, ll. 1-3, pg. 27, l. 17 – pg. 28, l. 2, pg. 37, ll. 23-34, and pg. 39, ll. 20-23. Claims 1-28 are currently pending in the instant application. No new matter is introduced by way of this amendment.

I. Priority

In the Office Action, it is stated that the subject matter of claims 1-12 and 16 is not disclosed in the parent applications as required under 35 U.S.C. § 112 and therefore the claims are not entitled to the filing date of any of the parent applications. More specifically, it is stated that the subject matter relating to "a substrate other than a fiber optic bundle" is not disclosed in the parent applications. Applicant respectfully disagrees.

The subject matter of claims 1-12 and 16 relating to "a substrate other than a fiber optic bundle" is disclosed in parent application U.S.S.N. 09/151,877, which was filed September 11, 1998 and issued as U.S. Patent 6,327,410. It is stated in the specification of the '410 Patent that "substrate" means "*any material* that can be modified to contain discrete individual sites appropriate for the attachment or association of beads and is amenable to at least one detection method." See the '410 Patent, col. 5, ll. 32-36 (emphasis added). For example, it is further stated in the '410 Patent that preferred substrates include "flat planar substrates such as glass, polystyrene and other plastics and acrylics," which are substrates other than a fiber optic bundle, as claimed.

Thus, claims 1-12 and 16 are entitled to the filing date of parent application U.S.S.N. 09/151,877, which was filed September 11, 1998.

II. Informalities

The disclosure was objected to because the first paragraph of the specification needed to be updated to reflect the U.S. Patent number for U.S. Patent Application 09/450,829. The specification has been amended to obviate this objection. Specifically, the specification has been amended to reflect the current status of the priority applications.

Claim 25 was objected to because the term "well" should be in the plural form "wells." Claim 25 has been amended to obviate this objection.

III. § 112, ¶ 2 Rejections

Claims 12, 20, 22 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

A. Claim 12 Is Not Indefinite

It is stated in the Office Action that claim 12 recites "said array is spotted" and is therefore indefinite because it is unclear whether the recitation is intended to describe the structure of the array or whether the recitation is intended to be a method step of spotting. Applicant respectfully traverses, because claim 12 actually recites "said array is a spotted array" and is not indefinite.

The definiteness requirement of 35 U.S.C. § 112, second paragraph, requires that each claim particularly point out and distinctly claim the subject matter that Applicants regard as their invention. That requirement is met when the scope of the claim is understood by one of ordinary skill in the art when the claim is read in light of the specification. See S3 Inc. v. nVIDIA Corp., 259 F.3d 1364, 1367 (Fed. Cir. 2001).

Applicant respectfully submits that claim 12 particularly points out and distinctly claims the subject matter Applicant regards as the invention. Claim 12 is directed to the "method of claim 1 or 11, wherein said array is a spotted array." Upon an examination of claim 12, it is clear that the term "spotted" is not a verb, but rather an adjective describing the noun "array." Thus, it is clear that the term "spotted" describes the structure of the array. Further, spotted arrays were well known in the art as taught in the Present Application, for example, at page 39, ll. 15-16, which cites several references that describe spotted arrays. Thus, Applicant

respectfully submits that claim 12, with the recitation of "a spotted array," particularly points out and distinctly claims the subject matter of the invention.

B. **Claim 20 Is Not Indefinite**

It is stated in the Office Action that claim 20 is indefinite because the recitation of "said sample" lacks proper antecedent basis. Claim 20, as amended, is directed to a "method according to claim 18 or claim 19 wherein said contacting further comprises including a solution to prevent the diffusion of said signal away from said microsphere." Thus, Applicant respectfully submits that claim 20 particularly points out and distinctly claims the subject matter of the invention.

C. **Claim 22 Is Not Indefinite**

It is stated that claim 22 is indefinite because the recitation of "the product" lacks proper antecedent basis in claims 18 and 19. Claim 22, as amended, is directed to a "method according to claim 18 or claim 19, wherein a product of said reaction comprises said signal." Thus, Applicant respectfully submits that claim 22 particularly points out and distinctly claims the subject matter of the invention.

IV. § 102(b) Rejection

Claims 1-12 were rejected under 35 U.S.C. § 102(b) as being anticipated by PCT Application WO 99/67641 to Chee et al. ("Chee"). It is respectfully submitted that claims 1-12 are not anticipated by Chee under § 102(b) because Chee is not a § 102(b) reference. Chee was published on December 29, 1999, which is after the Present Application priority date of September 11, 1998.

Thus, claims 1-12 are not anticipated. Reconsideration and withdrawal of the § 102(b) rejection is respectfully requested.

V. § 102(e) Rejections

Claims 1, 2, 10, and 13 were rejected under § 102(e) as being anticipated by U.S. Patent 5,667,976 to Van Ness et al. ("Van Ness"). Further, claims 19, 22, and 24 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 5,863,722 to Brenner ("Brenner"). It is respectfully submitted that claims 1, 2, 10, 13, 19, 22, and 24 are not anticipated under § 102(e).

A. **Independent Claim 1 Is Not Anticipated by Van Ness**

Claim 1 is directed to a method of detecting a target analyte in a sample. The method includes providing an array having an array substrate and at least first and second sites wherein first and second reaction components are immobilized at said first and second sites, respectively. The method also includes contacting said array substrate with said sample and detecting a change in an optical property around at least said first site as an indication of the interaction between said target analyte and at least said first reaction component.

As also discussed above, the step of "detecting a change in an optical property around at least said first site" means detecting a change in an optical property that is "remote from" or "released from" the first site. The definition is provided in the specification of the present application, which defines "around" or "surrounding" as "near the discrete site on the array. That is, the product is detected *remote from* or *released from* the discrete site." See Present Application, pg. 37, ll. 28-30 (emphasis added).

An anticipatory prior art reference must teach "*all of the elements and limitations* contained in the claims." ATD Corp. v. Lydall, Inc., 159 F.3d 534, 545 (Fed. Cir. 1998). Here, however, it is respectfully submitted that Van Ness fails to teach or suggest certain limitations of claim 1.

Van Ness discloses covalently immobilizing an oligonucleotide onto a support and conducting hybridization assays whereby specific target nucleic acids are detected. See Van Ness, Abstract. That is, Van Ness teaches the hybridization of a target nucleic acid with an oligonucleotide immobilized on a support. Van Ness, however, fails to teach or suggest detecting a change in an optical property around a first site as claimed. That is, Van Ness fails to teach or suggest detecting a change in an optical property remote from or released from the first site.

Claim 1, therefore, stands in condition for allowance. Reconsideration and withdrawal of the § 102(e) rejection is respectfully requested.

B. **Claims Depending from Claim 1 Are Patentable**

Because claims 2-12 depend directly or indirectly from claim 1 and incorporate all the limitations of claim 1, the above argument obviates the basis for this ground of rejection. Thus,

claims 2-12 are not anticipated by Van Ness. Reconsideration and withdrawal of the rejection is respectfully requested.

C. **Independent Claim 13 Is Not Anticipated by Van Ness**

Claim 13 is directed to a method of detecting a target analyte in a sample. The method includes providing an array, contacting said array with said sample; and detecting a change in an optical property around at least a first microsphere.

The step of "detecting a change in an optical property around at least a first microsphere means detecting a change in an optical property that is "remote from" or "released from" the first microsphere. The definition is provided in the specification of the present application, which defines "around" or "surrounding" as "near the discrete site on the array. That is, the product is detected *remote from* or *released from* the discrete site." See Present Application, pg. 37, ll. 28-30 (emphasis added).

It is respectfully submitted that Van Ness does not anticipate claim 13. Van Ness discloses covalently immobilizing an oligonucleotide onto a support and conducting hybridization assays whereby specific target nucleic acids are detected. See Van Ness, Abstract. That is, Van Ness teaches the hybridization of a target nucleic acid with an oligonucleotide immobilized on a support. Van Ness, however, fails to teach or suggest detecting a change in an optical property around a first site. That is, Van Ness fails to teach or suggest detecting a change in an optical property remote from or released from the first site.

Claim 13, therefore, stands in condition for allowance. Reconsideration and withdrawal of the § 102(e) rejection is respectfully requested.

D. **Claims Depending from Claim 13 Are Patentable**

Because claims 14-17 depend directly from claim 13 and incorporate all the limitations of claim 13, the above argument obviates the basis for this ground of rejection. Thus, claims 14-17 are not anticipated by Van Ness. Reconsideration and withdrawal of the rejection is respectfully requested.

E. **Independent Claim 19 Is Not Anticipated by Brenner**

Claim 19 is directed to a method of detecting an enzymatic reaction. The method includes providing an array, contacting said array with a composition comprising an enzyme, and monitoring a signal in a region surrounding a population of microspheres.

The step of "monitoring a signal in a region surrounding a population of microspheres means monitoring a signal that is "remote from" or "released from" the first microsphere. The definition is provided in the specification of the present application, which defines "around" or "surrounding" as "near the discrete site on the array. That is, the product is detected *remote from* or *released from* the discrete site." See Present Application, pg. 37, ll. 28-30 (emphasis added).

It is respectfully submitted that Brenner does not anticipate claim 19. Brenner discloses a method and materials for sorting polynucleotides with oligonucleotide tags. In an example cited in the Office Action, Brenner teaches anchoring target polynucleotides on microparticles and applying a cycle of ligation-phosphorylation-ligation in the presence of labelled probes, after which the microparticles are scanned for the presence of the label. See Brenner, col. 26, ll. 34-50. That is, Brenner teaches the detection of a label on a microparticle. Brenner, however, fails to teach or suggest monitoring a signal in a region surrounding a population of microspheres. That is, Brenner fails to teach or suggest monitoring a signal in a region remote from or released from the microspheres.

Claim 19, therefore, stands in condition for allowance. Reconsideration and withdrawal of the § 102(e) rejection is respectfully requested.

F. Claims Depending from Claim 19 Are Patentable

Because claims 20-25 depend directly or indirectly from claim 19 and incorporate all the limitations of claim 19, the above argument obviates the basis for this ground of rejection. Thus, claims 20-25 are not anticipated by Brenner. Reconsideration and withdrawal of the rejection is respectfully requested.

VI. § 103(a) Rejections

Claims 18, 22, and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Brenner. It is respectfully submitted that claims 18, 22, and 24 are not obvious.

A. Claim 18 Is Not Made Obvious by Brenner

Claim 18 is directed to a method of detecting an enzymatic reaction. The method includes providing an array, contacting said array with a sample comprising a target analyte, and monitoring a signal in a region surrounding a population of microspheres.

When rejecting claims under 35 U.S.C. § 103, the Examiner bears the burden of establishing a prima facie case of obviousness. See, e.g., In re Bell 26 USPQ2d 1529 (Fed. Cir.

1993); M.P.E.P. Section 2142. To establish a *prima facie* case the prior art, either alone or in combination, must teach or suggest every limitation of the rejected claims; and the prior art must provide one of ordinary skill with a suggestion or motivation to modify or combine the teachings of the references relied upon by the Examiner to arrive at the claimed invention.

It is respectfully submitted that Brenner, alone or in combination with any of the art of record, fails to teach or suggest every limitation of claim 18. As discussed above, Brenner discloses a method and materials for sorting polynucleotides with oligonucleotide tags. In an example cited in the Office Action, Brenner teaches anchoring target polynucleotides on microparticles and applying a cycle of ligation-phosphorylation-ligation in the presence of labelled probes, after which the microparticles are scanned for the presence of the label. See Brenner, col. 26, ll. 34-50. That is, Brenner teaches the detection of a label on a microparticle. Brenner, however, fails to teach or suggest monitoring a signal in a region surrounding a population of microspheres. That is, Brenner fails to teach or suggest monitoring a signal in a region remote from or released from the microspheres. Further, the Examiner points to no reference that teaches or suggests monitoring a signal in a region remote from or released from the microspheres. Accordingly, Brenner, alone, or in combination with any of the art of record, fails to teach or suggest each element of the claims.

In addition, the Examiner has pointed to no disclosure that would have motivated one of ordinary skill in the art to modify Brenner to reach the present claim. As the Examiner knows, a valid obviousness rejection based upon a single prior art reference must be supported by some suggestion of the claimed invention or motivation to reach the claimed invention which is found in that single prior art reference. See In re Laskowski, 10 U.S.P.Q.2d 1397, 1398-99 (Fed. Cir. 1989). The Examiner points to no suggestion or motivation in Brenner to reach the claimed element of monitoring a signal in a region surrounding a population of microspheres.

Claim 18, therefore, stands in condition for allowance. Reconsideration and withdrawal of the § 103(a) rejection is respectfully requested.

B. Claims Depending from Claim 18 Are Patentable

Because claims 20-25 depend directly or indirectly from claim 18 and incorporate all the limitations of claim 18, the above argument obviates the basis for this ground of rejection. Thus,

claims 20-25 are not made obvious by Brenner. Reconsideration and withdrawal of the rejection is respectfully requested.

VII. Double Patenting Rejections

Claims 13-14 and 18-19 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 39-40 and 51 of U.S. Patent 6,023,540 to Walt et al. ("Walt I"). Claims 13-23 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14, 18, and 21 of U.S. Patent 6,266,459 to Walt et al. ("Walt II"). Claims 13, 18, 19, and 23-25 were rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17-21 of U.S. Patent 6,327,410 to Walt et al. ("Walt III"). Claims 13, 18, 19, and 23-25 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17-21 of co-pending Application No. 09/925,292 to Walt et al. ("Walt IV").

Without admitting the propriety of the rejection and in the interest of furthering prosecution, Applicants will file a terminal disclaimer when there is an indication of allowable claims. Accordingly, reconsideration and withdrawal of the double patenting rejections is respectfully requested.

Conclusion

Applicants respectfully submit that claims 1-28 are in condition for allowance. Reconsideration and a Notice of Allowance for all pending claims is respectfully requested. Please direct any calls in connection with this application to the undersigned attorney at 415-544-7085.

This response is being submitted on or before April 4, 2004 and is submitted with a petition for a one month extension of time, making this a timely response. It is believed that no additional fees are due in connection with this filing. However, the Commissioner is authorized to charge any additional fees, including extension fees or other relief which may be required, or credit any overpayment to Deposit Account No. 50-2319 (Our File: A-67209-4/RMS/DCF [469420-47]).

Respectfully submitted,

DORSEY & WHITNEY LLP

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